Chapter 2 Linear Relations and Functions

2-1 Relations and Functions

Relation--set of ordered pairs

{(2,5)(3,6)(4,7)}

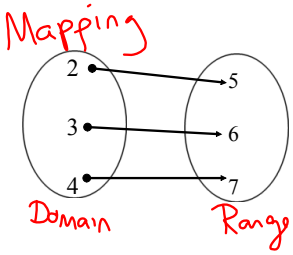
Domain--set of 1st coordinate

{2, 3, 4}

Range--set of 2nd coordinate

{5, 6, 7}

Function--relation in which each element in the domain is paired with exactly one element in the range

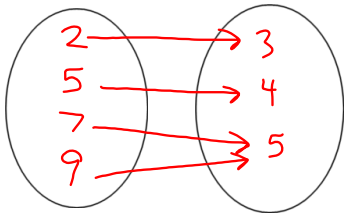


A function because every x is paired with exactly one y.

One-to-one--when every element in the range is paired with exactly one element in domain

(Every y has one x)

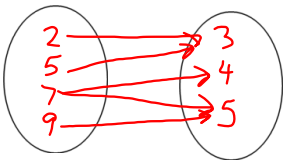
{(2, 3), (5, 4), (7, 5), (9, 5)}



Fn? yes

1-1? no

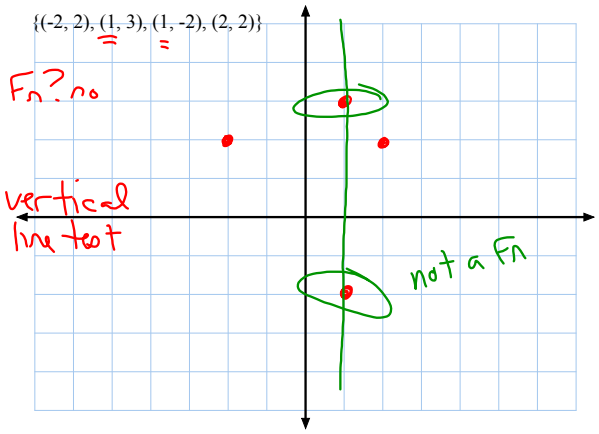
{(2,3), (5, 3), (7, 4), (7, 5), (9, 5)}



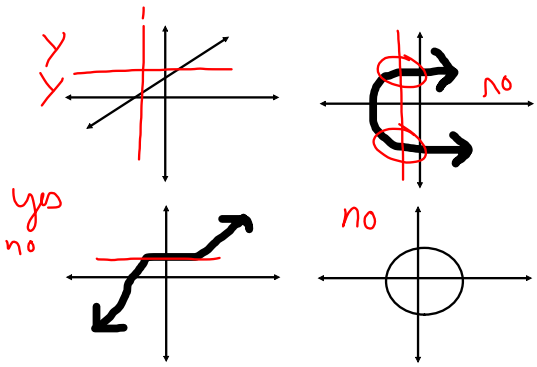
Fn? no
1-1? no

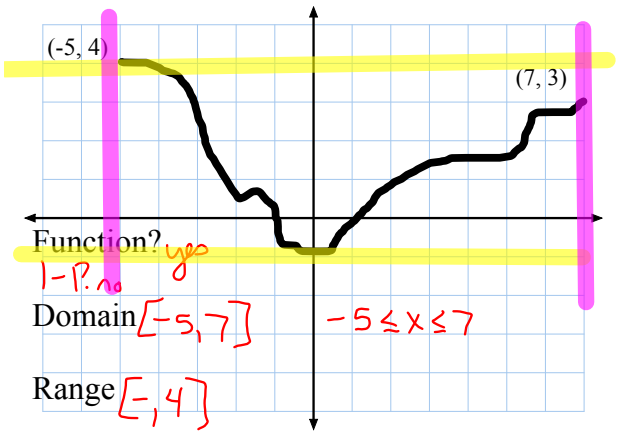
{(-2, 2), (1, 3), (1, -2), (2, 2)}

Fn? no



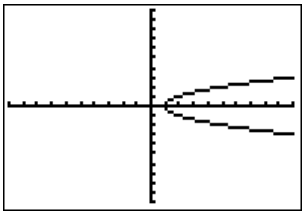
Is it a function?





Function? yes
1-1? no
Domain [-5, 7]
$-5 \le x \le 7$
Range [-, 4]

$x = y^2 + 1$



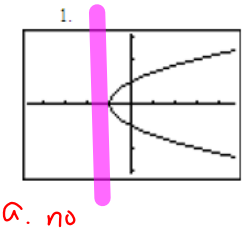
Function?

Domain

Range

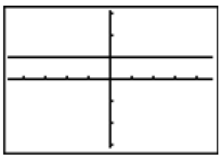
Worksheet

1.



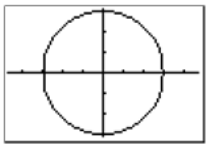
a. no
b. no
c. D: $[-1, +\infty)$ $x \geq -1$
d. R: $\mathbb{R}$ $(-\infty, +\infty)$

2.



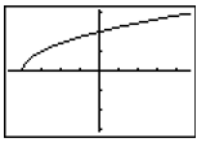
a. yes
b. no
c. D: $\mathbb{R}$
d. R: $\{1\}$

3.



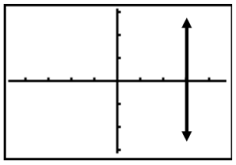
no, no
D: $[-3, 3]$
R: $[-3, 3]$

4.



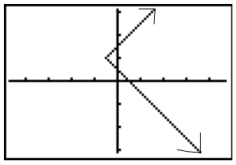
yes
yes
D: $[-4, +\infty)$
R: $[0, +\infty)$

5.



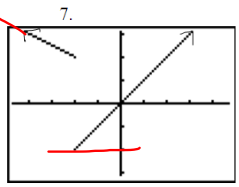
no, no
D: $\{3\}$ $[3, 3]$ $x = 3$
R: $\mathbb{R}$

6.

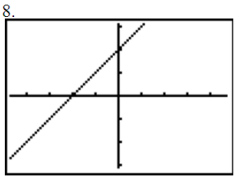


no, no
D: $[-\frac{1}{2}, +\infty)$
R: $\mathbb{R}$

7.



8.

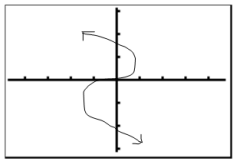


no, no

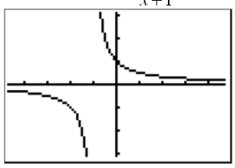
D: $\mathbb{R}$

R: $[-2, +\infty)$

9.



10. $y = \frac{1}{x+1}$

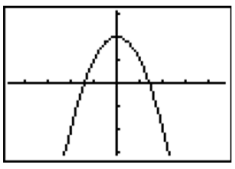


yes yes

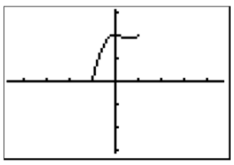
D: $\mathbb{R}$; $x \neq -1$

R: $\mathbb{R}$; $y \neq 0$

11.



12.



Function Notation

$f(x) = 3x + 2$ $g(x) = x^2 - 2x$

$f(2) = 3(2) + 2$

$= 8$

$f(4) = 3(4) + 2$

HW
p60-61
#s 4-6, 17-22, 23-27odd (do not graph), 42, 44-47, 51